Tank GT20

B5191

Service Engineer’s Manual

PREFACE

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Version 1.0

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Operation is subject to the following conditions:

1) This device may not cause harmful interference, and

2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Plug the equipment into an outlet on a circuit different from that of the receiver.

Consult the dealer on an experienced radio/television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

Notice for Europe (CE Mark) This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual provides you with instructions on installing your Tank GT20. This manual is intended for experienced users and integrators with hardware knowledge of personal computers.

This manual consists of the following parts:

Chapter 1: Provides an Introduction to the Tank GT20 B5191 barebone, packing list, describes the external components, gives a table of key components, and provides block diagrams of the system.

Chapter 2: Covers procedures on installing the CPU, memory module, PCI card, and hard drive.

Chapter 3: Covers removal and replacement procedures for pre-installed components

Appendix: Describes the differences between mainboard BIOS and system BIOS. The cable connection tables are also provided for reference of system setup. F+

or SMDC setting up, please refer to Appendix III.

For information on the mainboard, please refer to the attached mainboard user's manual. You can find the detailed description about jumper and BIOS settings from the motherboard manual.

SAFETY INFORMATION

Before installing and using the Tank GT20, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the Power Company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

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Chapter 1: Overview

1.1 About the Tank GT20 B5191

Congratulations on your purchase of the TYAN Tank™ GT20 (B5191), a highly-optimized rack-mountable barebone system. The Tank GT20 (B5191) offers the latest processor server system, providing a rich feature set and incredible performance. Leveraging advanced technology from Intel®, the Tank GT20 (B5191) server system is capable of offering scalable 32- or 64- bit computing, high-bandwidth memory design, and a lightning-fast PCI-Express bus implementation. The Tank™ GT20 (B5191) not only empowers your company in today's demanding IT environment but also offers a smooth path for future application usage.

TYAN is also proud to deliver the Tank™ GT20 (B5191) in SATA flavor while supporting up to four (4) hot-swap hard drives, one (1) slim CD-ROM and one (1) optional slim floppy disk drive (not included). The Tank™ GT20 (B5191) uses TYAN's latest tooling-made chassis featuring a robust structure, tool-less and modularized design, and a solid mechanical enclosure. All of this provides the Tank™ GT20 (B5191) the power and flexibility to meet the needs of nearly any server application.

1.2 Features

Enclosure
- Industry 19” rack-mountable 1U chassis
  - (4) 3.5” HDD bays
  - (1) slim CD-ROM bay
- Dimension: D 22.4 x W 17.2 x H 1.72 inch (568 x 436 x 43.6mm)

Processors
- One LGA775 socket
- Supports Intel ® Pentium 4 and Pentium D processors (Prescott/Smithfield/Clear Mill/Presler)

Chipset
- Intel 3000 (Mukilteo-2) MCH
- ICH7R south bridge
- PXH-V 64-bit PCI Hub
- SMSC SCH5027 super I/O chip

Memory
- Four 240-pin DDR2 DIMM sockets
- Supports ECC DIMMs
- Maximum of 8GB unbuffered DDR2-667/533/400

Expansion Slots
- (1) PCI-E x16 slot on riser card (via 4 connectors, with x8 signal, rise card model:2082-2)

or (1) 64-bit 64/133MHz PCI-X slot on pre-installed riser card (riser card model: M2055)
- (1) Tyan “TARO” SO-DIMM socket

Back I/O Ports
- Stacked PS/2 mouse & keyboard ports
- (1) COM1 connector
- (1) 15-pin VGA port
- (2) USB 2.0 ports
- (3) LAN ports

Front Panel Features
- I/O
  - (2) USB 2.0 ports
- LED indicators
  - HDD active LEDs, (2) LAN LEDs, (1) Power LED, (1) System warning LED, ID LED
- Switches
  - Power, Reset, NMI, ID

Integrated Storage Controller (ICH7R)
- Single channel master mode supports up to (2) IDE devices
- Supports for ATA-133/100/66/33 IDE drives and ATAPI compliant devices

Storage
- Pre-installed slim type 24x CD-ROM
- (4) hard disk drives

Networking
- (3) Ethernet ports
  - (2) Intel i82573V GbE LAN controllers
  - (1) Intel i82551QM fast ethernet LAN controller, operating at PCI 32-bit/33MHz interface

Video
- XGI Volari Z7 (XG20)
- 16MB frame buffer memory

Motherboard
- Tyan Tomcat S5191G3NR system board
- ATX footprint (12” x 9.6”) (305 x 244m)

BIOS
- Phoenix BIOS on 8Mbit LPC Flash ROM
- Serial Console Redirect
- USB boot supported
- Supports APM 1.2 and ACPI
- PnP, DMI2.0, WfM2.0 power management
- S0/S1/S4/S5 states supported

Server Management
- Auto fan control
- Chassis intrusion header
- Temperature, voltage, and fan monitoring

Power Supply
- EPS 12V, 1U, 350W with PFC
- 100V~240V AC input

System Cooling

- (5) Sunon 40*40*28mm 14500rpm heavy-duty fans
- (1) passive CPU heatsink

Regulatory

- FCC Class B (Declaration of Conformity)
- CE (Declaration of Conformity)

Environment Temperature

- Operating temperature 5^{o}C~35^{o}C
- Non-operating temperature -40^{o}C ~ 70^{o}C

1.3 Unpacking

1.3.1 Opening the Box

Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

Packaged box contents

Packaged accessories

Contact your distributor if anything is missing or appears damaged.

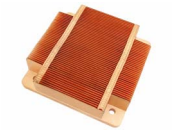
1.3.2 Accessories

If any items are missing or appear damaged, contact your retailer or browse to Tyan's Web site for service.

1 x Tyan driver CD

Power Cords
Left to right: Europe, US

HDD Screws



Heatsink x 1

Mounting Ears & Screws

Air Duct x 1

Barebone/Mainboard Manual

M2055 Riser Card

FDD Kit

FDD Cable

FDD Rails & Screws

FDD Backplane Cable

Rail Kit

Mounting Bracket x 4

Sliding Brackets
Front L-Bracket x 2
Rear L-Bracket x 2

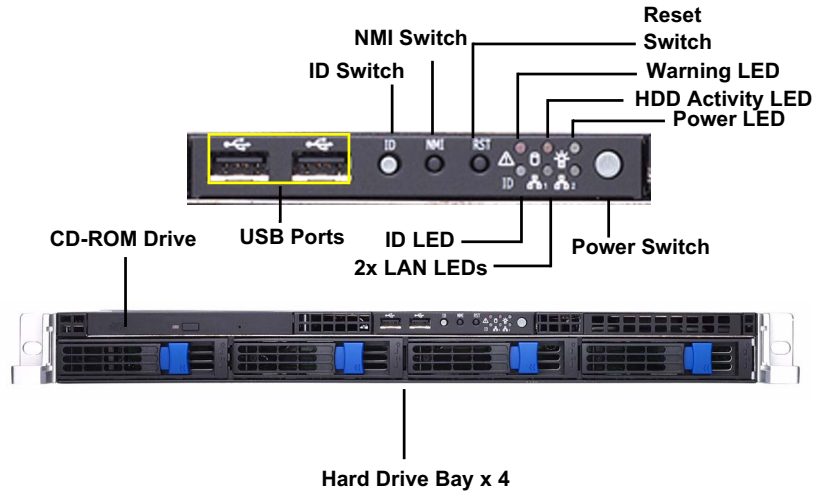
Screws Kit

Sliding Rails x 2

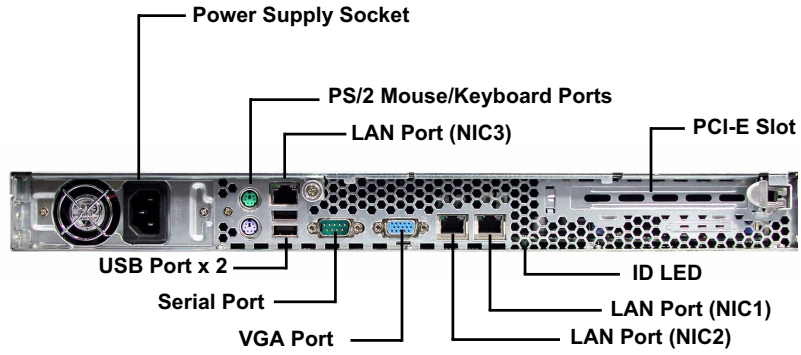
1.4 About the Product

The following views show you the product.

1.4.1 Front View



1.4.2 Rear View



1.4.3 LED Definition

Front Panel

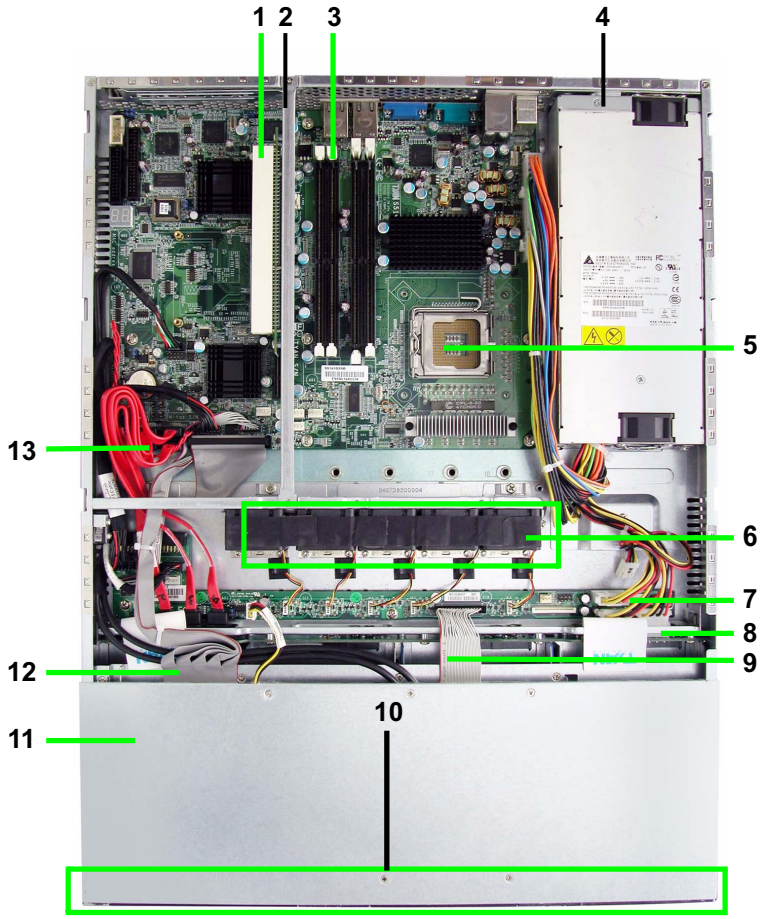
LED	Color	State	Description
Power	Green	ON	Power ON
	OFF	OFF	Power OFF
HDD Activity	Amber	Random Blink	HDD access activity
	OFF	OFF	No disk activity
LAN1/LAN2 Activity	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
Warning	Red	ON	Fan fails
	OFF	OFF	Normal
ID LED	Blue	ON	System is identified
	OFF	OFF	System is not identified
Hot Swappable HDD Tray Power LED	Green	ON	Power connected
	OFF	OFF	Power disconnected
Hot Swappable SATA HDD Access LED	Amber	Random Blinking	HDD access activity
	OFF	OFF	No disk activity
Hot Swappable SAS HDD Access LED	Amber	ON	HDD ready
	Amber	Random Blinking	HDD access activity
	OFF	OFF	HDD not ready

Rear I/O LED

LED	Color	State	Description
RJ45 NIC1 Linkage (Left Side)	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
RJ45 NIC1 Mode (Right Side)	Amber	ON	Gigabit mode
	Green	ON	100M mode
	OFF	OFF	10M mode
RJ45 NIC2 Linkage (Left Side)	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
RJ45 NIC2 Mode (Right Side)	Amber	ON	Gigabit mode
	Green	ON	100M mode
	OFF	OFF	10M mode
RJ45 NIC3 Linkage (Left Side)	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
RJ45 NIC3 Mode (Right Side)	Green	ON	100M mode
	OFF	OFF	10M mode
ID LED	Blue	ON	System is identified
	OFF	OFF	System is not identified

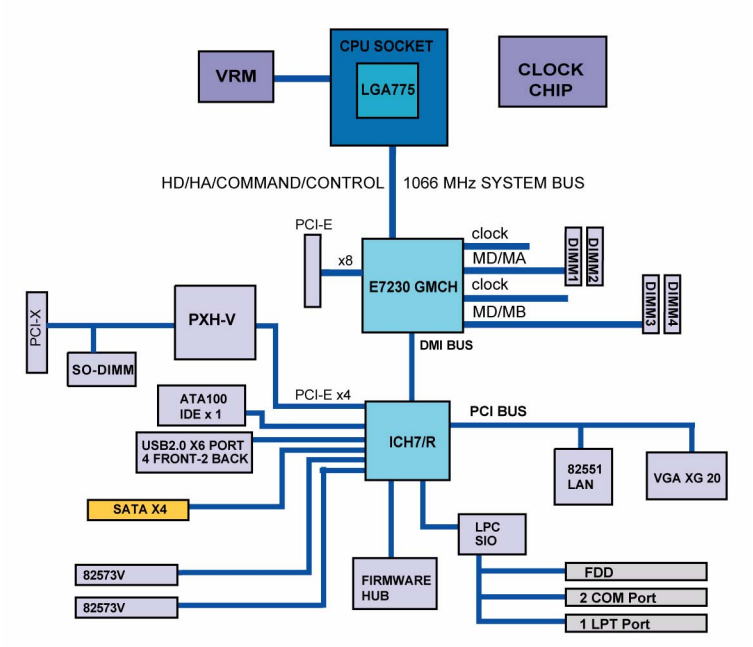
NOTE: “Right” or “Left” is viewed from the rear.

1.4.4 Internal View

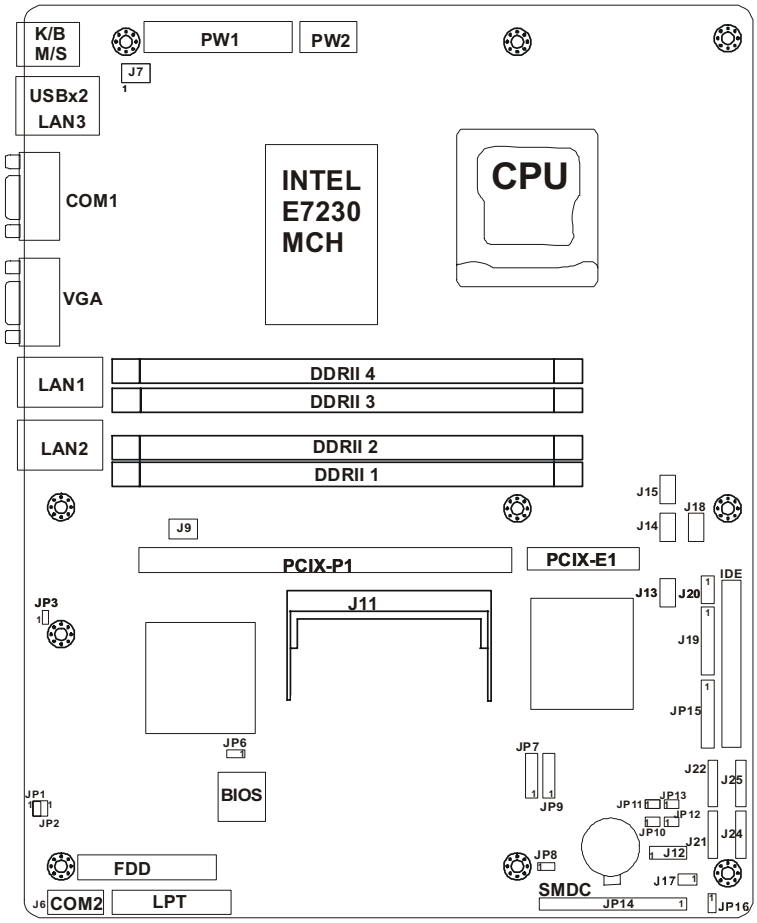


1. PCI-X Slot
2. Link Bar
3. Memory Slots
4. EPS 12V Power Supply
5. CPU Socket
6. System Fans (Left to right: FAN5, FAN4, FAN3, FAN2, FAN1)
7. Adapter Board
8. SATA Backplane
9. LED Control Board Cable
10. Four SATA HDDs
11. Slim CD-ROM
12. CD-ROM Cable
13. SATA Cables

1.4.5 Motherboard (S5191) Block Diagram



1.4.6 Motherboard Layout



Jumpers & Connectors

Jumper /Connector	Function
J6	COM2 Header
J7/J9	Chassis Fan Connector
J11	SO-DIMM Socket
J13/J14/J18	Front Fan Connector
J15	CPU Fan Connector
J21/J22/J24/J25	Serial ATA RAID Connector
JP1/JP2	SMDC/ASF2.0 Select Header
JP3	LAN3 Enable/Disable Jumper
JP6	PCI-X Speed Select Header
JP7/JP9	Front Panel USB2.0 Connector
JP14	SMDC Connector
JP15	Front Panel Header
JP16	Clear CMOS jumper
J12/J17/J19/J20 JP8/JP10/JP11 JP12/JP13	Reserved

Chapter 2: Setting Up

2.0.1 Before You Begin

This chapter explains how to install the CPU, CPU heatsink, memory modules, and hard drives. Instructions on inserting a PCI-E card are also given.

Take note of the precautions mentioned in this section when installing your system.

2.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

2.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

2.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the Tank GT20 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

NOTE:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

2.1 Rack Mounting

After installing the necessary components, the Tank GT20 can be mounted in a rack using the supplied rack mounting kit.

Rack mounting kit

Sliding Rails x 2:

Sliding Brackets x 4 (Front x 2, Rear x 2)

Mounting Ears x 2

Screws Kit x 1

Mounting Brackets x 4

2.1.1 Installing the Server in a Rack

Follow these instructions to mount the Tank GT20 into an industry standard 19" rack.

NOTE: Before mounting the Tank GT20 in a rack, ensure that all internal components have been installed and that the unit has been fully tested.

Screws List (including screws for SMDC)

A: Flat 6#-32 x4~x16

B: B-type 6#-32 x4

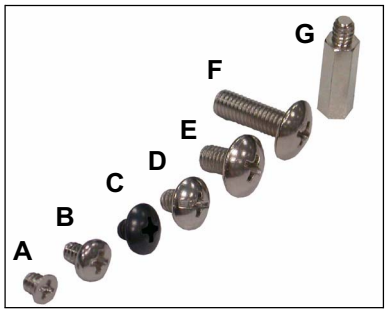
C: M4-4L x8

D: M4-5L x4

E: M4-8L x8

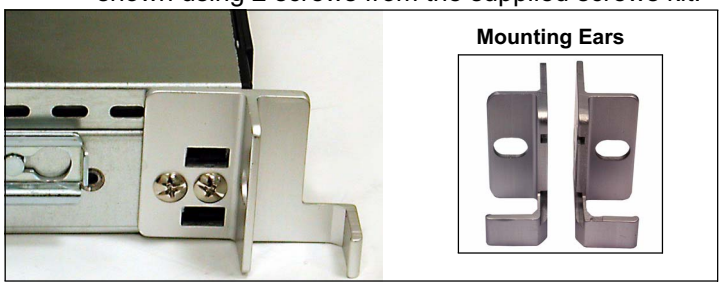
F: M4-15L x2

G: 13.5mm stand-off x1

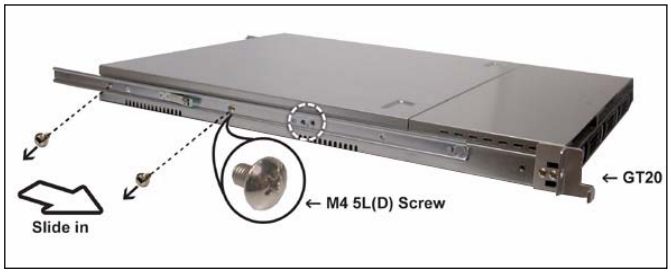


Installing the Inner Rails to Chassis

1. Screw the mounting ear to each side of Tank GT20 as shown using 2 screws from the supplied screws kit.

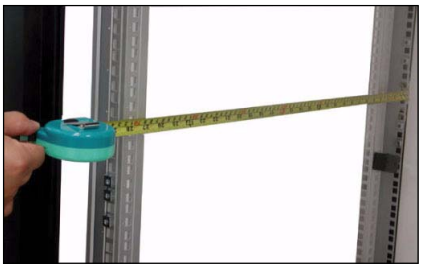


2. Draw out the inner rails from rail assembly. Install inner rails to left and right sides of chassis using 2 M4-5L(D) screws for each side.

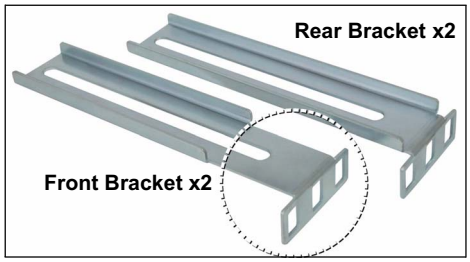


Installing Outer Rails to the Rack

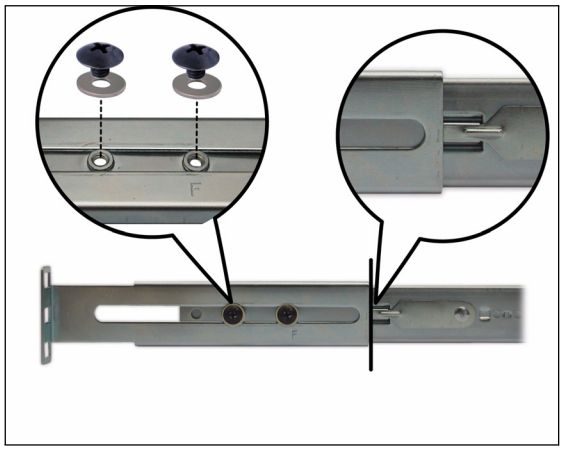
3. Measure the distance between inner side of the front and rear mounting brackets in the rack.



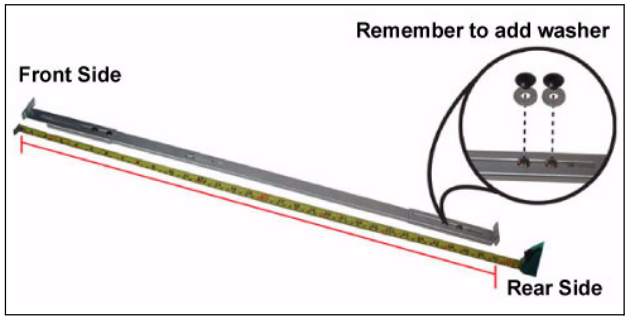
4. Locate the front and rear brackets.



5. Reserve 40mm on the front bracket. Secure the front bracket to outer rail with 2 M4-4L(C) screws.



6. Reserve the distance same as in Step 2 on rear bracket. Secure the rear bracket to outer rail with 2 M4-4L(C) screws.

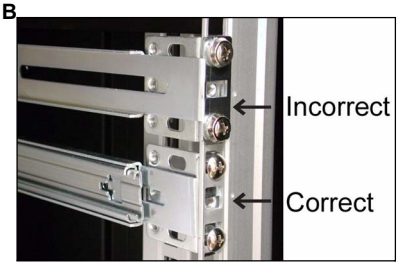


7. Secure the outer rail to the rack using 2 brackets and 4 M4-8L(E) screws for each side (A). Secure the mounting brackets from inside, not outside, of the rack (B).

A

Mounting Bracket

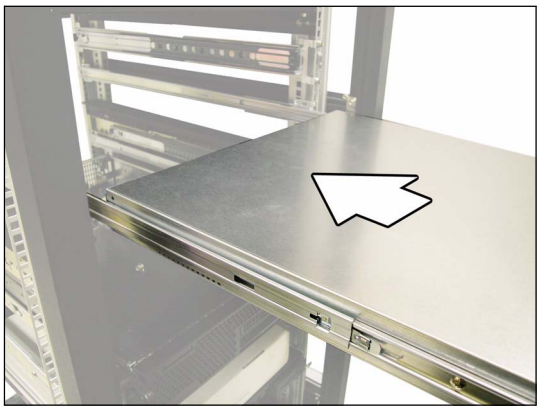
B



Rackmounting the Server

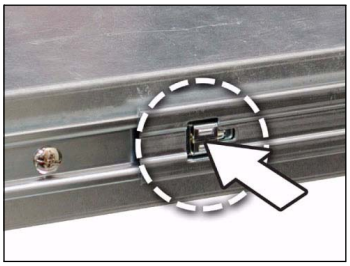
8. Draw out the middle rail to the latch position.

9. Lift the chassis and then insert the inner slide rails into the middle rails.



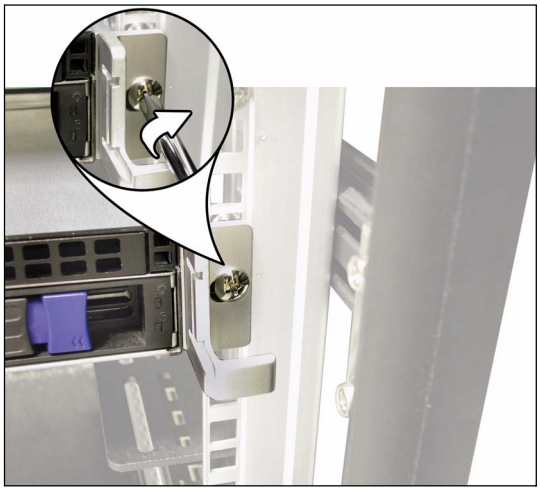
10. Push the chassis in and press the latch key (A). Then push the whole system into the rack (B).

A



B

11. Secure the mounting ears of chassis to the rack with 2 M4-15L(F) screws.



NOTE: To avoid injury, it is strongly recommended that two people lift the Tank GT20 into the place while a third person screws it to the rack.

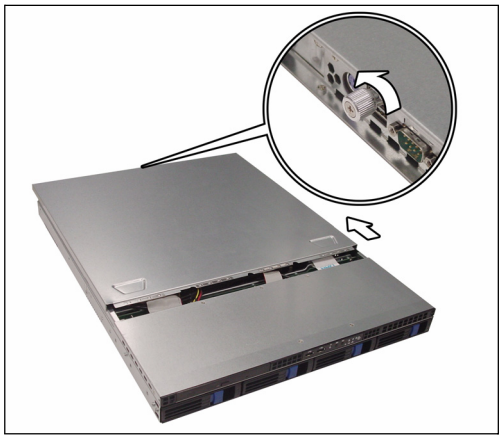
2.2 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPU, memory modules, and PCI card.

2.2.1 Removing the Chassis Cover

Follow these instructions to remove the Tank GT20 chassis cover.

1. Release the screw on the back side. Then slide the chassis cover in the direction of arrow.



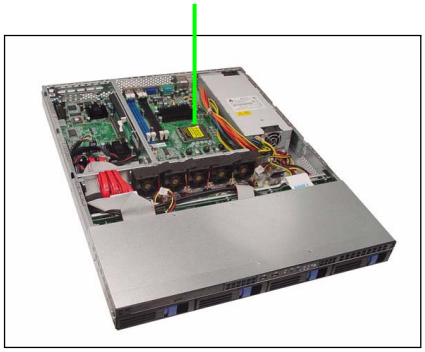
2. Lift the cover off.

2.2.2 Installing the CPU, Heatsink, and Air Duct

Follow these instructions to install the CPU, CPU heatsink, and air duct.

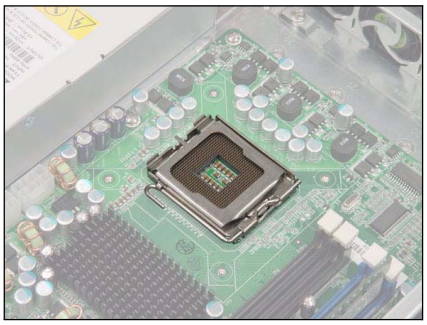
1. Release the pre-installed air duct. Locate the CPU socket.

CPU socket

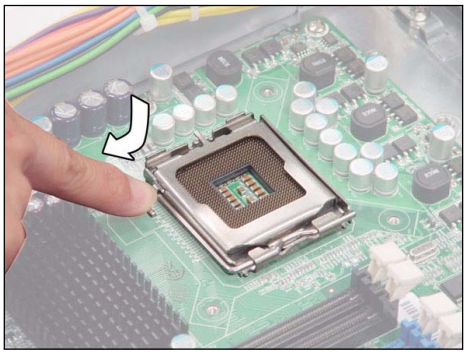


2. Remove the cover on the CPU socket cap.

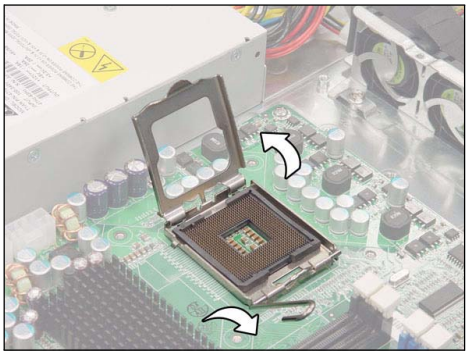
3. Locate the lever of CPU socket.



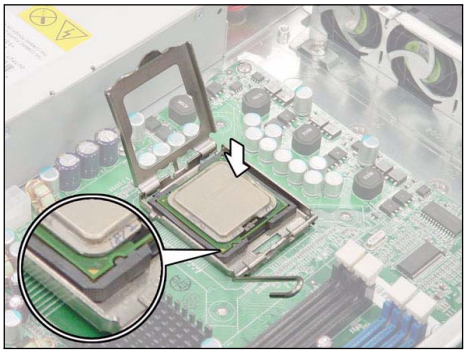
4. Press and pull the lever in the direction as illustrated.



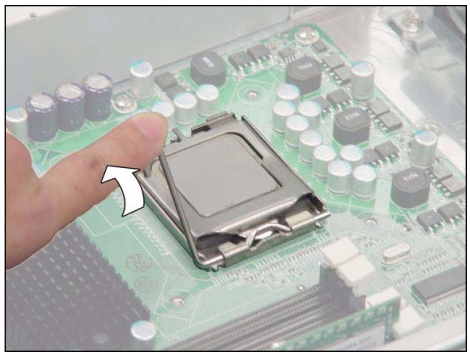
5. Open the socket in the direction as illustrated.



6. Place CPU on the socket, ensuring that the edge with triangle mark aims at the edge of socket with triangle mark.

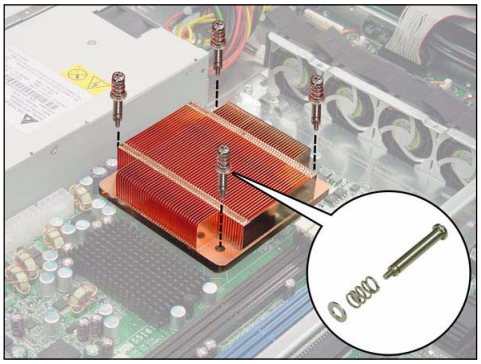


7. Close the cover and secure the CPU socket in the direction shown.

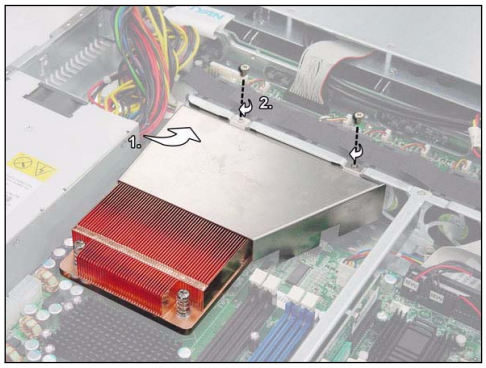


8. Secure the heatsink with 4 screws.

NOTE: Remember to install the washer and nut while installing the screws.



9. Secure the air duct with 2 screws.

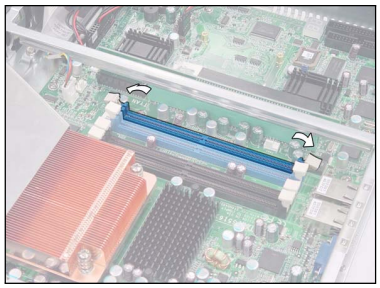


2.2.3 Installing the Memory

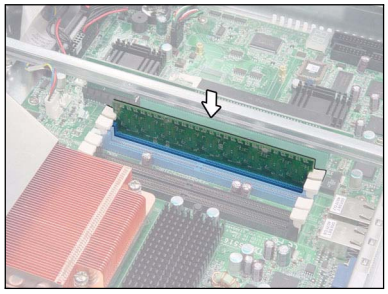
Follow these instructions to install the memory modules on the motherboard.

1. Locate the memory slots on the motherboard.

2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



3. Align the memory module with the slot. The module has indentations that align with notches in the slots.
4. Insert the memory module into the slot as shown.

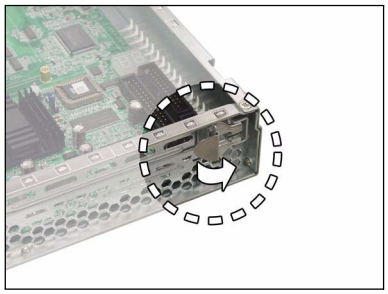


When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module.

2.2.4 Installing the PCI Card

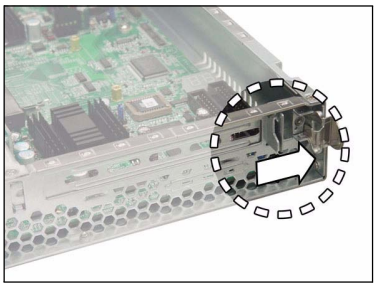
Follow these instructions to install a PCI card.

1. Push the tab of PCI slot on the rear panel in the direction as shown to release the bracket.

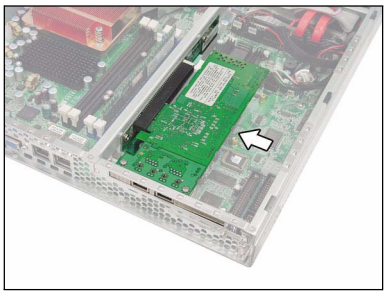


2. Move the bracket to right as shown and then take off the bracket (A).
3. Insert the PCI card in the directions of arrow (B).

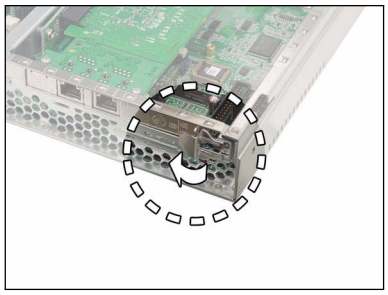
A



B



4. Push the tab of PCI slot on the rear panel in the direction as shown to fix PCI card.

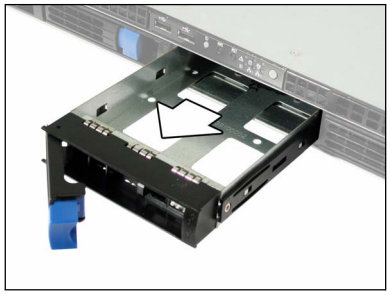


2.3 Installing the Hard Drive

The Tank GT20 barebone system supports Serial ATA hard drives. Follow these instructions to install a SATA hard drive.

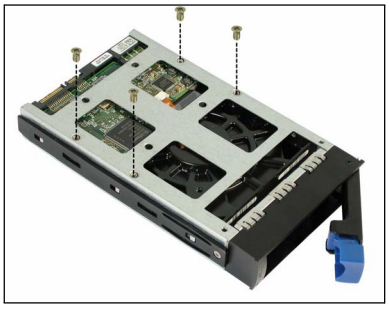
1. Press the locking lever latch in the direction of arrow (**A**) and then pull the locking lever open (**B**).

2. Slide the drive tray out.



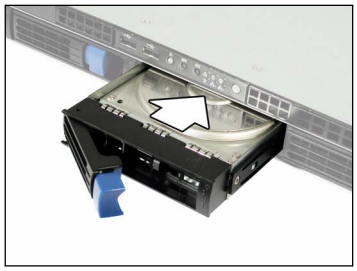
3. Place a hard drive into the drive tray.

4. Using 4 HDD screws to secure the HDD.



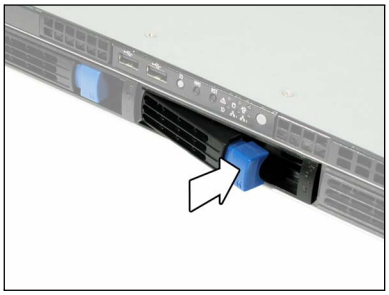
5. Reinsert the drive tray into the chassis (A), ensuring that the drive tray is completely inserted into the chassis (B).

A



B

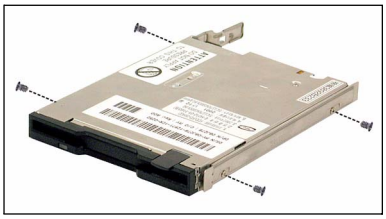
6. Pressing the locking lever to secure the hard drive tray.



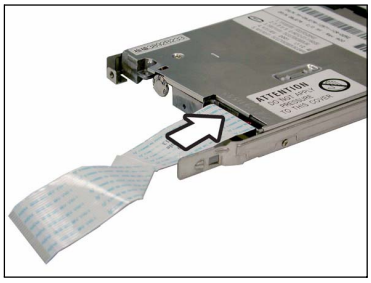
2.4 Installing the Slim FDD (Option)

1. Locate the two FDD rails and screws from the FDD kit. Secure the two rails to FDD using four screws.

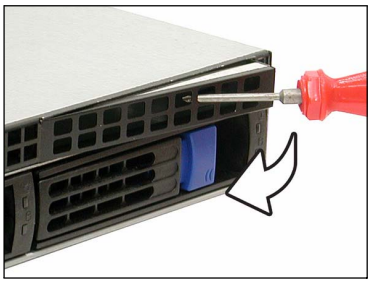
FDD Rails & Screws



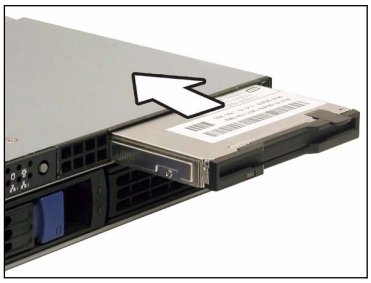
2. Connect the FFC cable to FDD.



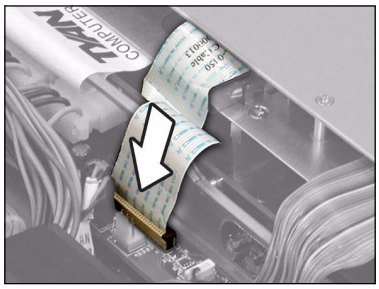
3. Use a screw driver to take off the door of FDD tray.



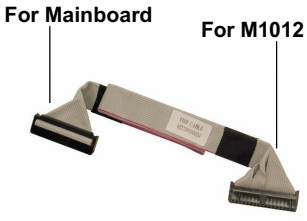
4. Insert the FDD module into the tray.

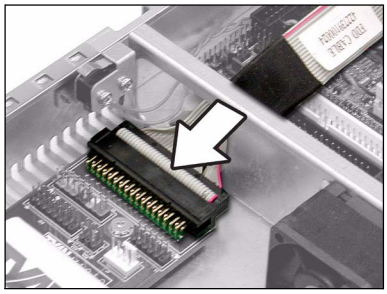


5. Connect the FFC cable to the FDD connector on M1012 adapter board.

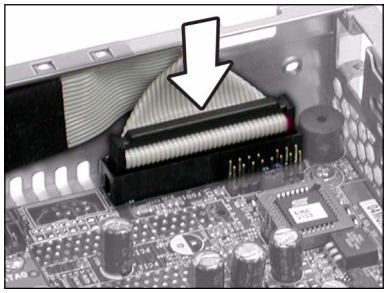


6. Locate the FDD cable from FDD kit. Connect the wrinkle side to the connector on M1012 adapter board. Refer to the picture below for the correct direction.





7. Connect the other side to the connector on motherboard.



Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace pre installed components including the motherboard, LED control board, HDD, and CD-ROM drive.

Take note of the precautions in this section when installing your system.

3.1.1 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers keeps them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

3.1.2 Tools

The procedures that follow require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

3.1.3 Precautions

Components and electronic circuit boards can be damaged by static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the Tank GT20 or injury to yourself.

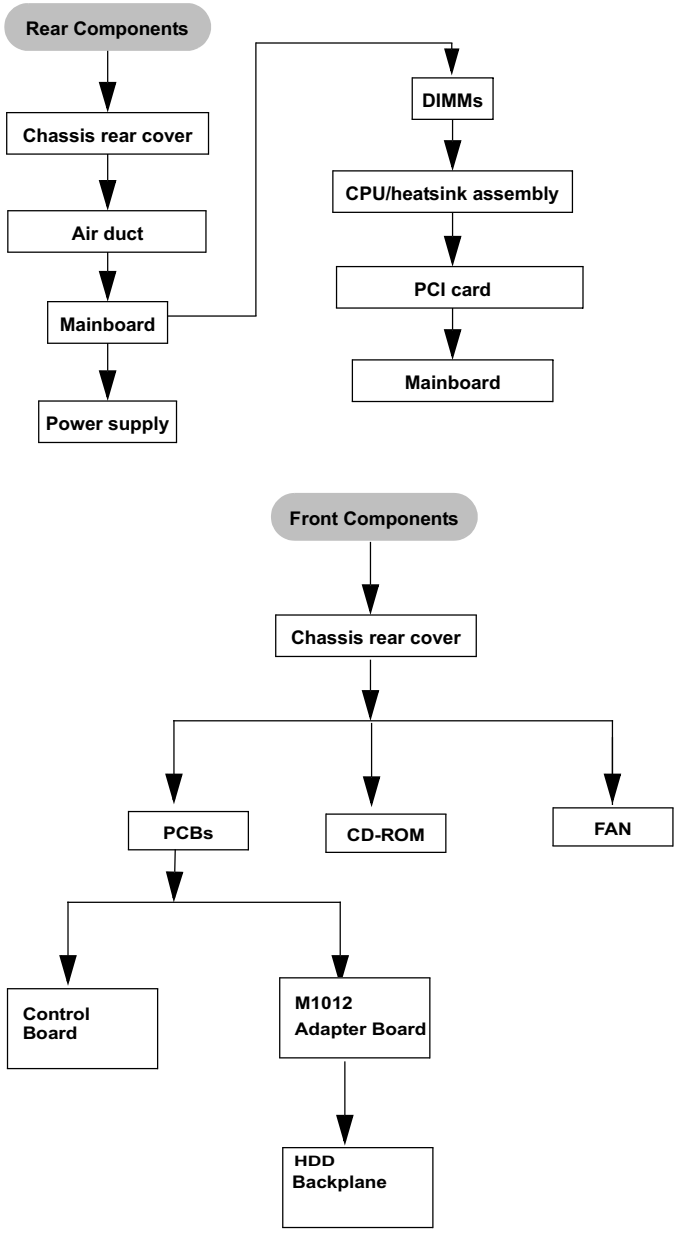
- Ground yourself properly before removing the top cover of the system. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Notes:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.

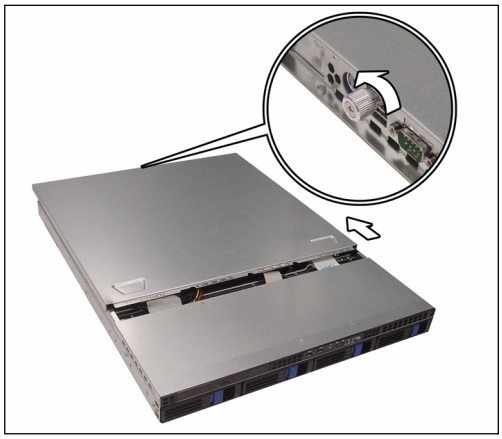


3.3 Removing the Cover

Before replacing any parts you must remove the chassis cover.

Follow these instructions to remove the Tank GT20 chassis cover.

1. Release the screw on the back side. Then slide the chassis cover in the direction of arrow.



2. Lift the cover off.

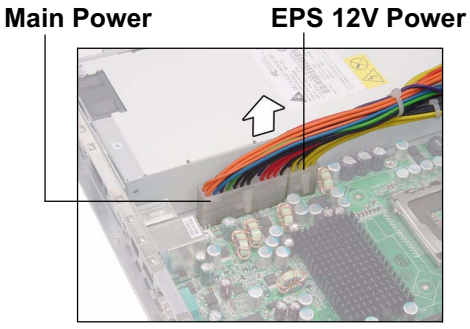
3.4 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

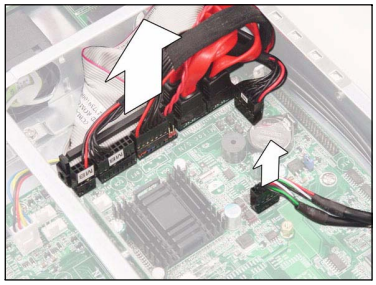
3.4.1 Disconnecting All Motherboard Cables

Before replacing the motherboard or certain components, remove cables connected to the motherboard. Follow these instructions to remove all motherboard cabling.

1. Disconnect ATX power cables.



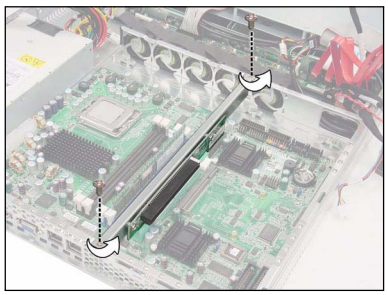
2. Disconnect the Fan, Front Panel, SATA, and USB cables. Refer to the mainboard layout on p.12 for the locations.



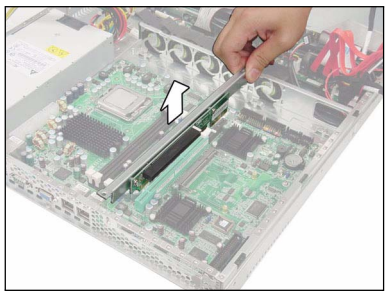
3.4.2 Removing the Motherboard

Follow these instructions to remove the motherboard from the chassis when all add-on components have been removed.

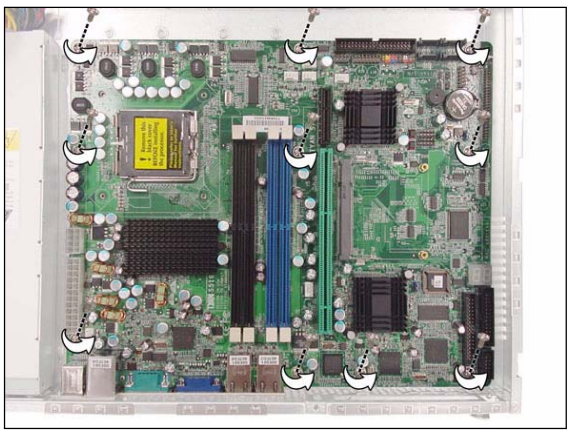
1. Release the two screws securing the link bar.



2. Remove the link bar.



3. Remove the eleven screws securing the motherboard to the chassis.

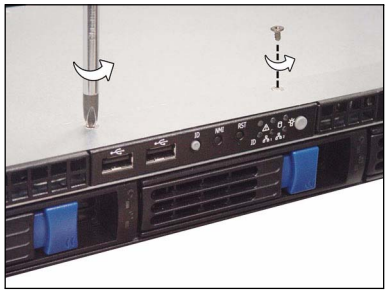


4. Remove the motherboard.

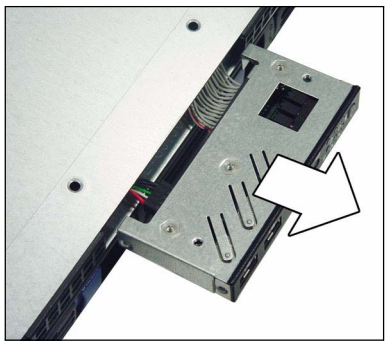
3.5 Replacing the LED Control Board

Follow these instructions to remove the LED control board.

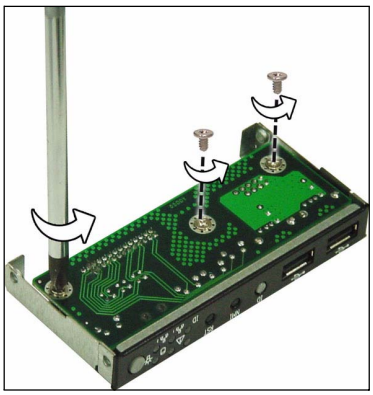
1. Remove the 2 screws securing the LED control board to the chassis.



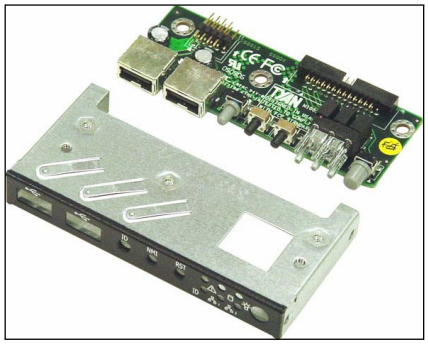
2. Pull the LED control board free from the chassis and unplug the ribbon and USB cables from the connector.



3. Remove the three screws securing the LED control board to the bracket.

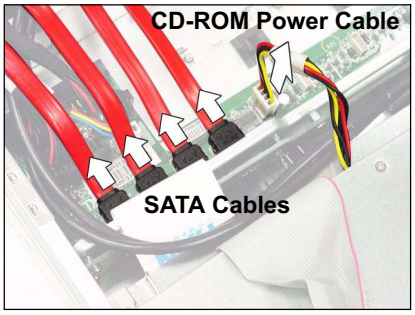


4. Release the LED control board from the chassis. After replacement, insert and secure the unit to the chassis following the reverse procedures from step 1~3.

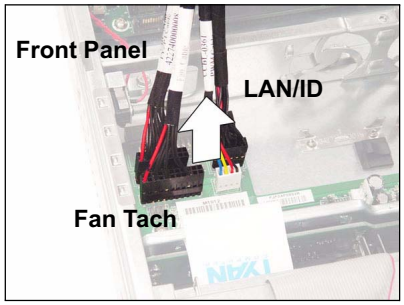


3.6 Replacing the M1012 Adapter Board

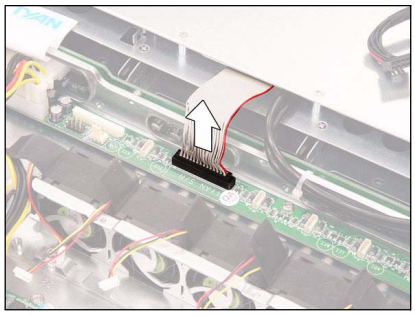
1. Before replacing M1012 adapter board, you must disconnect the four SATA cables connected to the SATA backplane. After that, disconnect all the cables connected to the M1012 adapter board.



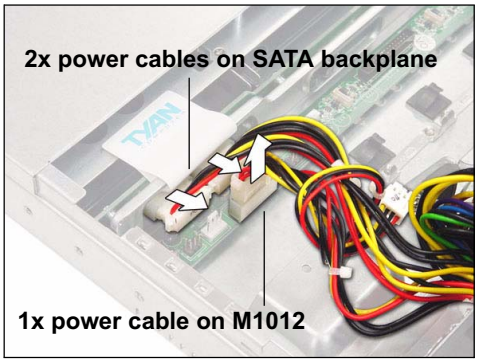
2. Remove the Front Panel, LAN/ID LED and Fan Tach cables.



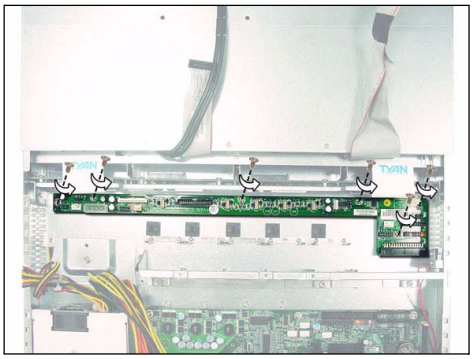
3. Remove the Front Panel Control Board cable.



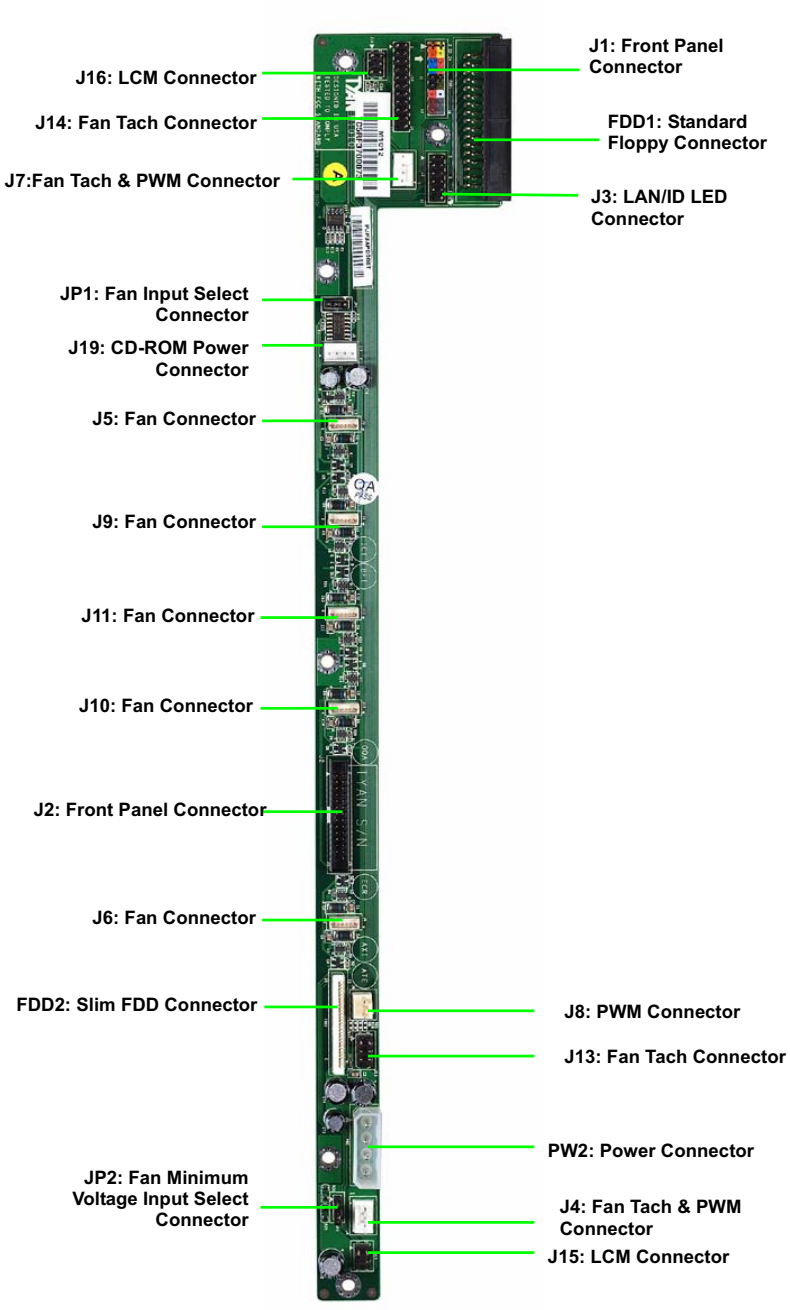
4. Remove one power cable connected to M1012 adapter board and two power cables connected to SATA back-plane.



5. Remove the 6 screws securing the M1012 adapter board. After that, you can release the M1012 adapter board from the chassis.



3.6.1 M1012 Adapter Board Features



3.6.2 M1012 Adapter Board Connector Pin Definition

J1 TYFP Front Panel Connector

1	HDLED+	2	PW_LED+
3	HDLED-	4	PW_LED -
5	RESET-	6	PWR_SW+
7	RESET+	8	PWR_SW -
9	VOLTAGE5	10	WLED+
11	EXT_INT	12	WLED-
13	V5SB	14	KEY PIN
15	ICH_SMBDAT	16	GND
17	ICH_SMBCLK	18	INTRU#

J2 Front Panel Connector

1	HDLED+	2	HDLED-
3	RESET+	4	RESET-
5	PW_LED+	6	PW_LED-
7	WLED+	8	WLED-
9	ICH_SMBDAT	10	ICH_SMBCLK
11	EXT_INT	12	VOLTAGE5
13	V5SB	14	INTRU#
15	PWR_SW+	16	PWR_SW -
17	LAN1_LED+	18	LAN1_LED-
19	LAN2_LED+	20	LAN2_LED-
21	LAN3_LED+	22	LAN3_LED-
23	ID_LED+	24	ID_LED-
25	ID_SW+	26	ID_SW-
27	KEY PIN	28	NC

J3 LAN/ID LED Connector

1	LAN1_LED+	2	LAN1_LED-
3	LAN2_LED+	4	LAN2_LED-
5	LAN3_LED+	6	LAN3_LED-
7	ID_LED+	8	ID_LED-
9	ID_SW+	10	ID_SW-
11	KEY PIN	12	PWM

FAN Signal Related Connector Pin Definition

NOTE: The FAN signal naming is based on HW circuit design only. It might be different from the system fan naming.

J4 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN1_TACH
4	PWM1 (Default)

J7 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN7_TACH
4	PWM1 (Default)

J8 PWM Connector

1	GND
2	PWM2
3	FAN1_TACH

J13 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	KEY PIN	8	NC

J14 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	GND	8	FAN4_TACH
9	GND	10	FAN5_TACH
11	GND	12	FAN6_TACH
13	GND	14	FAN7_TACH
15	GND	16	FAN8_TACH
17	GND	18	FAN9_TACH
19	GND	20	FAN10_TACH
21	KEY PIN	22	NC

J6 Fan Connector

1	FAN1_12VPWM
2	FAN1_TACH
3	GND
4	GND
5	FAN2_TACH
6	FAN2_12VPWM

J10 Fan Connector

1	FAN3_12VPWM
2	FAN3_TACH
3	GND
4	GND
5	FAN4_TACH
6	FAN4_12VPWM

J11 Fan Connector

1	FAN5_12VPWM
2	FAN5_TACH
3	GND
4	GND
5	FAN6_TACH
6	FAN6_12VPWM

J9 Fan Connector

1	FAN7_12VPWM
2	FAN7_TACH
3	GND
4	GND
5	FAN8_TACH
6	FAN8_12VPWM

J5 Fan Connector

1	FAN9_12VPWM
2	FAN9_TACH
3	GND
4	GND
5	FAN10_TACH
6	FAN10_12VPWM

J15 & J16 LCM Connectors

1	LCM_+5V	2	LCM_SIN
3	KEY PIN	4	GND
5	LCM_+5VSB	6	LCM_SOUT

JP1 Fan Input Select Connector

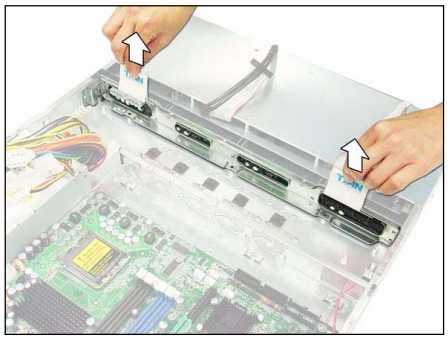
Pin1 & Pin2 Close	Fan PWM signal from J8
Pin2 & Pin3 Close	Fan PWM signal from J4, J7 & J14 (Default)

JP2 Fan Input Select Connector

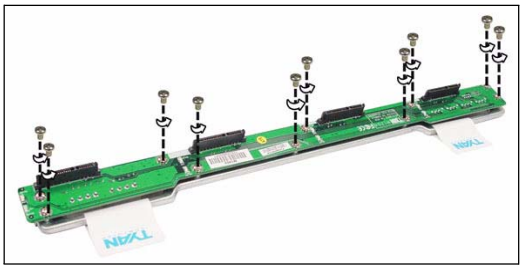
Pin1 & Pin2 Close	0V
Pin2 & Pin3 Close	+5V (Default)

3.7 Replacing the SATA Backplane

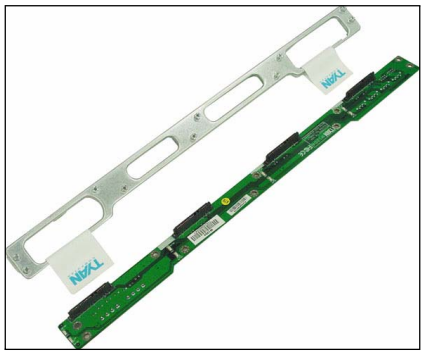
1. After removing the M1012 adapter board, you can easily grab the two lables to lift the SATA backplane.



2. Remove the ten screws that secure the bracket to the backplane.

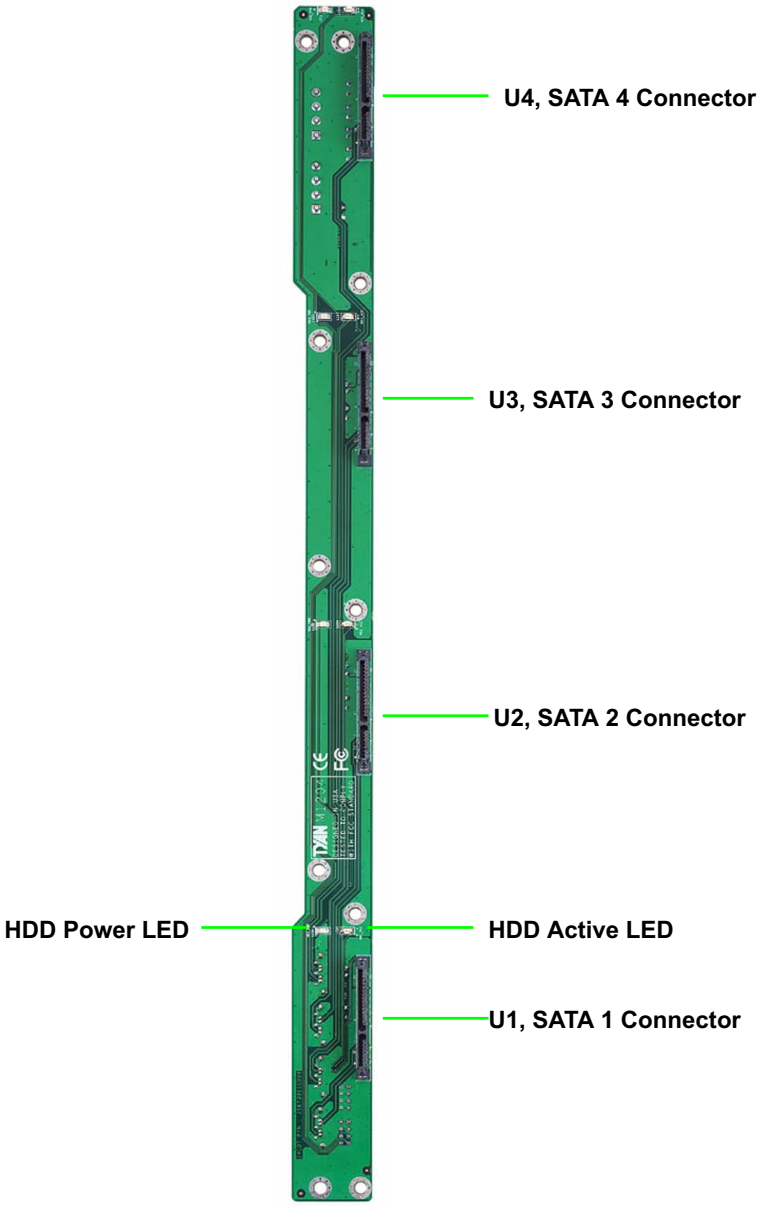


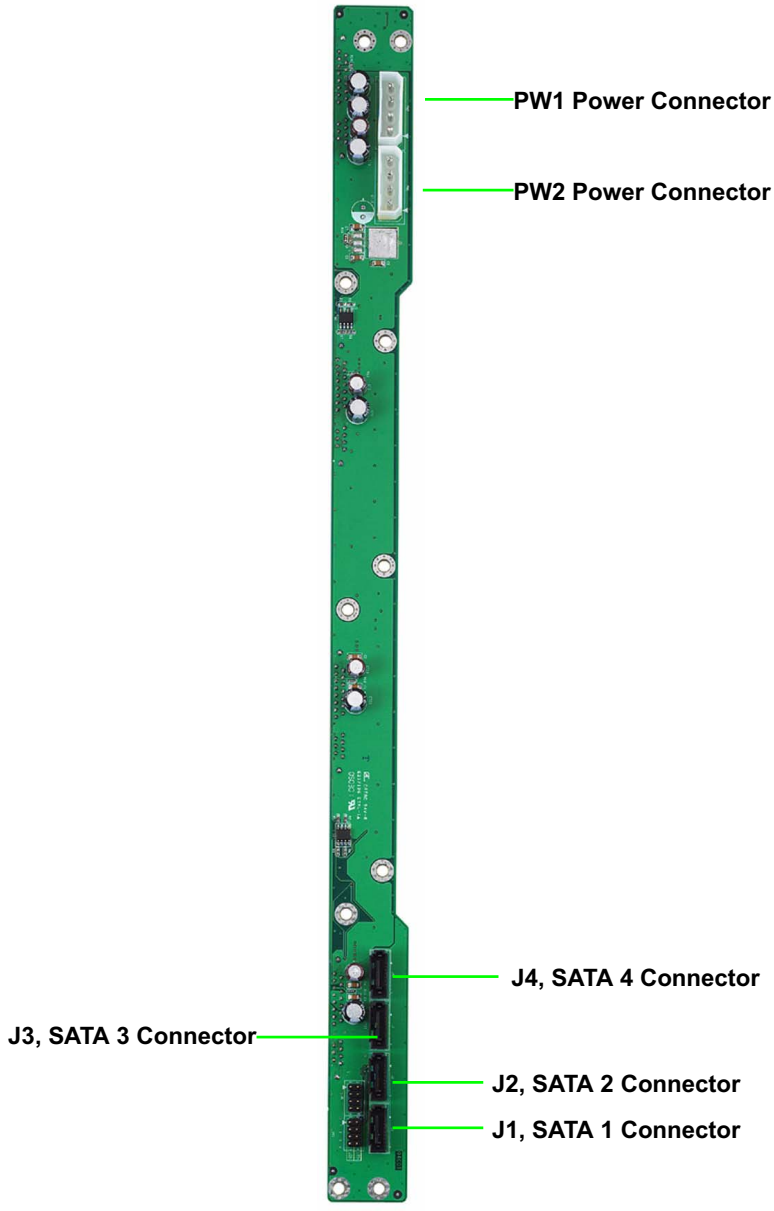
3. Release the backplane free from the bracket.



4. Replace the unit to the chassis following the reverse procedures from step 1 to 3 after done.

3.7.1 S-ATA Backplane (M1208) Features

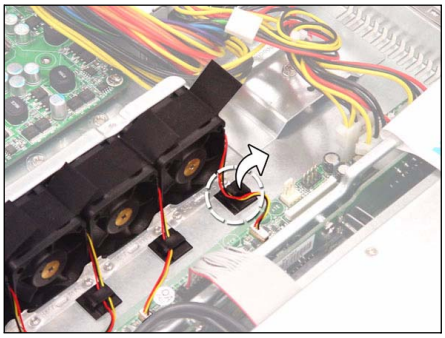



PW1 Power Connector
PW2 Power Connector
J4, SATA 4 Connector
J3, SATA 3 Connector
J2, SATA 2 Connector
J1, SATA 1 Connector

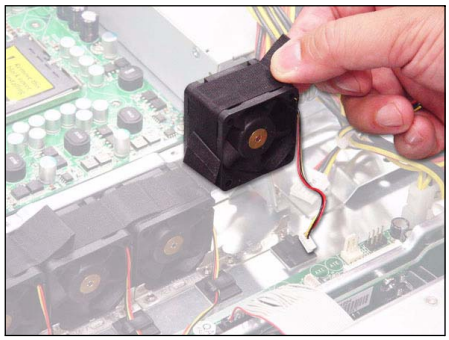
3.8 Replacing the Cooling Fan

Follow these instructions to replace the cooling fans in your system.

1. Locate the fan connector on the motherboard and unplug the fan cable.



2. Take the fan away from the chassis.



3. Replace the fan into the chassis following the reverse procedures from 1 to 2 after done.

3.9 Replacing the Power Supply

1. Remove the two screws that secure the power supply to the chassis.

2. Remove the screw that secure the fan assembly to the chassis

Appendix I: BIOS Differences

The BIOS of B5191 is similar to S5191 while there are some menus different. The following table displays the differences in BIOS between B5191 and S5191. For a complete review of S5191 BIOS, refer to the motherboard manual.

Difference 1:

S5191 Advanced/Hardware Monitoring

PhoenixBIOS Setup Utility		
Advanced		
Hardware Monitoring		Item Specific Help
▶Voltage Monitoring Sub-Menu		
▶FAN Control Sub-Menu		
CPU FAN	xxxx RPM	
FAN1	xxxx RPM	
FAN2	xxxx RPM	
FAN3	xxxx RPM	
FAN4	xxxx RPM	
FAN5	xxxx RPM	
CPU Temp. =	xx ºC/ xxx ºF	
Ambient Temp =	xx ºC/ xxx ºF	
F1: Help ↑↓: Select Item -/+: Change Values		F9: Setup Defaults
Esc: Exit ←→: Select Menu Enter: Select ▶ Sub-Menu		F10: Previous Values

B5191 Advanced/Hardware Monitor

Phoenix cME FirstBIOS Pro Setup Utility		
Advanced		
Hardware Monitor		Item Specific Help
▶Voltage Monitoring Sub-Menu		
▶FAN Control Sub-Menu		
System Fan 1	xxxx RPM	
System Fan 2	xxxx RPM	
System Fan 3	xxxx RPM	
System Fan 4	xxxx RPM	
System Fan 5	xxxx RPM	
CPU Temp. =	xx ºC/ xxx ºF	
Ambient Temp =	xx ºC/ xxx ºF	
F1: Help ↑↓: Select Item -/+: Change Values		F9: Setup Defaults
Esc: Exit ←→: Select Menu Enter: Select ▶ Sub-Menu		F10: Previous Values

Difference 2:

S5191 Advanced/Hardware Monitoring/FAN Control

PhoenixBIOS Setup Utility		
Advanced		
FAN Control Sub-Menu		Item Specific Help
Auto Fan Control	[Disabled]	Auto Mode Fan Control Parameters
CPU FAN Input type select	[4 PIN]	
FAN1 Input type select	[4 PIN]	
FAN2 Input type select	[4 PIN]	
FAN3 Input type select	[4 PIN]	
F1: Help ↑↓: Select Item -/+: Change Values F9: Setup Defaults Esc: Exit ←→: Select Menu Enter: Select ▶ Sub-Menu F10: Previous Values		

B5191 Advanced/Hardware Monitor/FAN Control

Phoenix cME FirstBIOS Pro Setup Utility		
Advanced		
FAN Control Sub-Menu		Item Specific Help
Auto Fan Control	[Enabled]	
PWM Duty Cycle	[10%]	
FAN Input type select	[3 PIN]	
F1: Help ↑↓: Select Item -/+: Change Values F9: Setup Defaults Esc: Exit ←→: Select Menu Enter: Select ▶ Sub-Menu F10: Previous Values		

Appendix II: Cable Connection Tables

SATA Cable

Table 1: B5191G20S4H Model

M1208 SATA Backplane	Connect to	Motherboard
SATA 1	→	SATA 1 (J21)
SATA 2	→	SATA 2 (J24)
SATA 3	→	SATA 3 (J22)
SATA 4	→	SATA 4 (J25)

FAN Cable

Table 2: System Fan to M1012 Adapter Board

System Fan	Connect to	M1012
Fan 1	→	J6 Fan Connector
Fan 2	→	J10 Fan Connector
Fan 3	→	J11 Fan Connector
Fan 4	→	J9 Fan Connector
Fan 5	→	J5 Fan Connector

Table 3: M1012 Adapter Board to Motherboard

M1012	Connect to	Motherboard Fan
J14	→	J19, J20
J7	→	J15

Power Supply Cable

Table 4: Power Supply to Motherboard

Power Supply	Connect to	Motherboard
P1 24-pin power cable	→	PW1 24-pin connector
P2 8-pin power cable	→	PW2 8-pin connector

Table 5: Power Supply to M1012 Adapter Board

Power Supply	Connect to	M1012
P3 4-pin power cable	→	PW2 4-pin connector

Table 6: Power Supply to M1208 Backplane

Power Supply	Connect to	M1208
P4 4-pin power cable	→	PW1 4-pin connector
P6 4-pin power cable	→	PW2 4-pin connector

The Other Cable

Table 7: M1012 Adapter Board to Motherboard

M1012	Connect to	Motherboard
J1 Front panel connector	→	JP15 (TYFP1)
J3	→	J12 (TYFP2)

Table 8: M1003 Front Panel Control Board Related Cable

M1003 J1 USB connector	→	Motherboard JP7 (USB2)
M1003 J2 connector	→	M1012 J2 connector

Table 9: CD-ROM Related Cable

Motherboard PRE-IDE connector	→	CD-ROM Backplane
M1012 J19 power connector	→	CD-ROM Backplane

Table 10: Chassis Intrusion Cable

Chassis intrusion switch	→	Motherboard JP15 Pin 16 & Pin 18

Table 11: FDD Related Cable (Option)

M1012 FDD1 connector	→	Motherboard J5 FDD
M1012 FDD2 connector	→	Slim FDD drive

Appendix III: Installing SMDC Cards

The following provides you with the information on installing SMDC cards. You may refer to the following for installing M3289 or M3290 into HDD tray or chassis.

Screws List (including screws for Rail)

A: Flat 6#-32 x4~x16

B: B-type 6#-32 x4

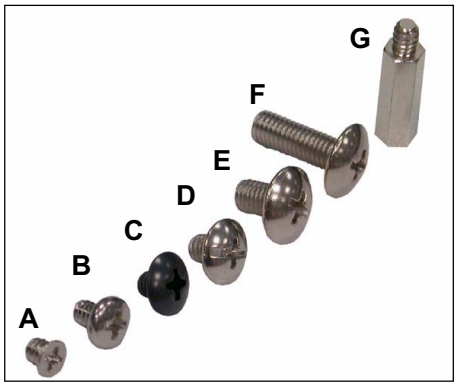
C: M4-4L x8

D: M4-5L x4

E: M4-8L x8

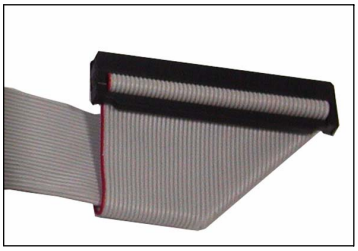
F: M4-15L x2

G: 13.5mm stand-off x1

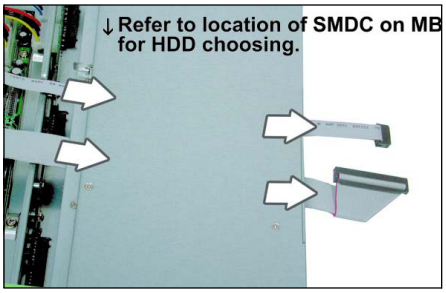


Installing M3289 into HDD Tray

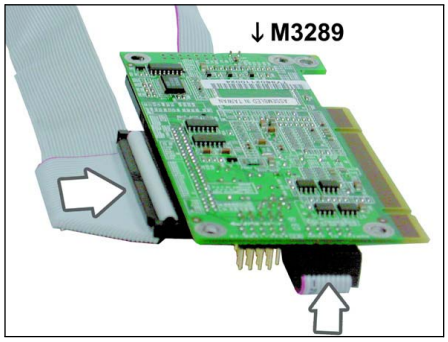
1. Fold up the cable.



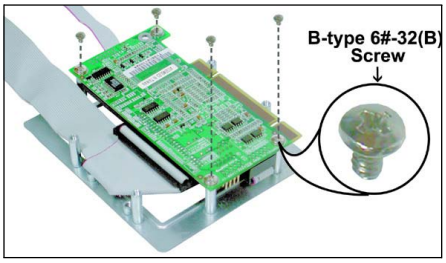
2. a: Choose a HDD tray. b: Insert the cable into the rear of HDD tray. c: Pull the cable out.



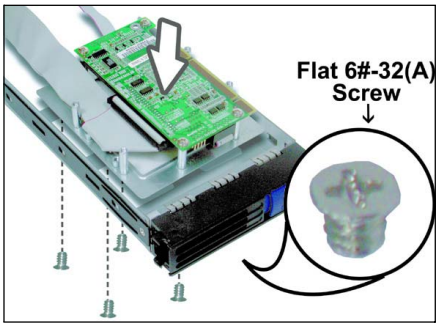
3. Connect the cable to M3289.



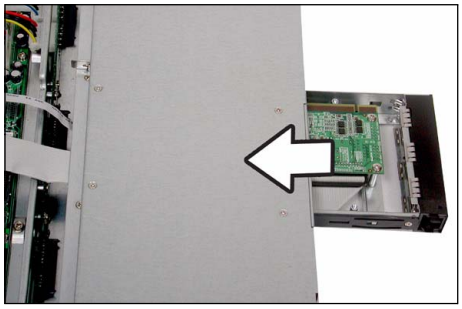
4. Align M3289 in reverse with 4 “M1” stand-offs. Secure the SMDC with 4 screws as illustrated.



5. Secure M3289 onto HDD tray as illustrated.



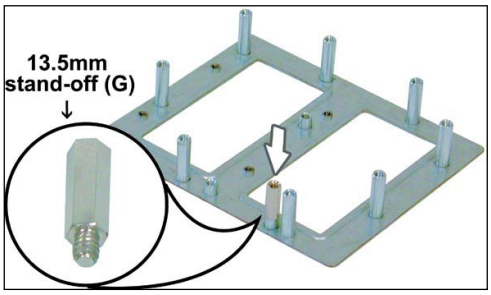
6. Insert and secure the HDD tray. **NOTE:** For internal or dummy HDD tray, secure the HDD tray with 1 or 2 screws.



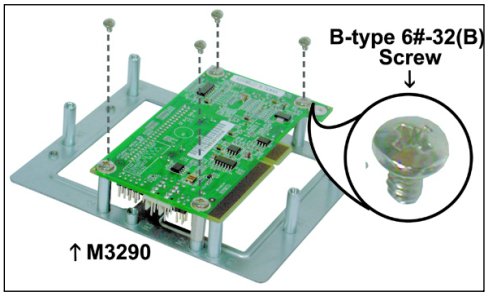
7. Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.

Installing M3290/M3291 into HDD tray

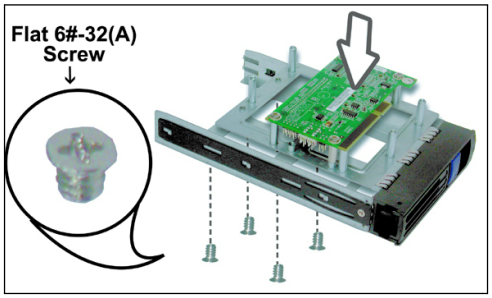
1. Secure a removable stand-off of 13.5mm to the location of “M2” stand-off as illustrated on SMDC bracket.



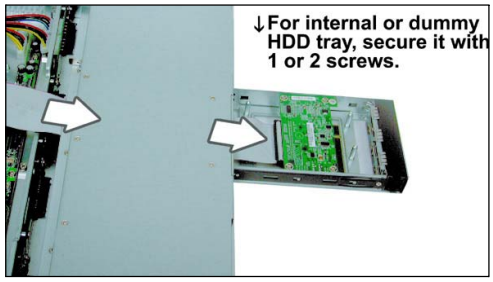
2. Secure M3290 in reverse to 4 “M2” stand-offs on bracket.



3. a: Choose a HDD tray. **NOTE**: Refer to the location of SMDC connector on mainboard for choosing a HDD tray.
   b: Secure SMDC to the HDD tray.



4. a: Inset the cable into the rear of HDD tray. b: Connect the cable to M3290. c: Insert and secure HDD tray.

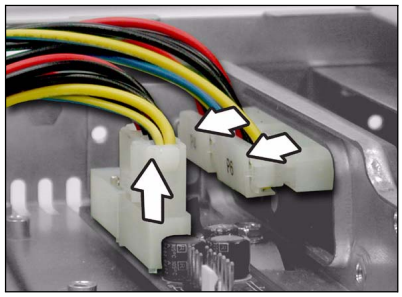


5. Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.

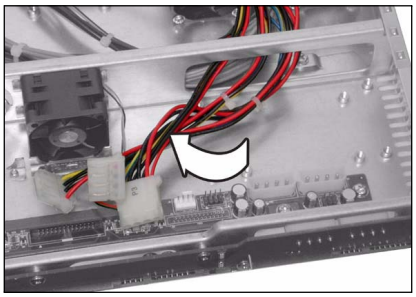
Installing M3290/M3291 into GT20 Chassis

NOTE: The products produced now may not support the procedures below. We'll provide you with the upgraded models as soon as possible.

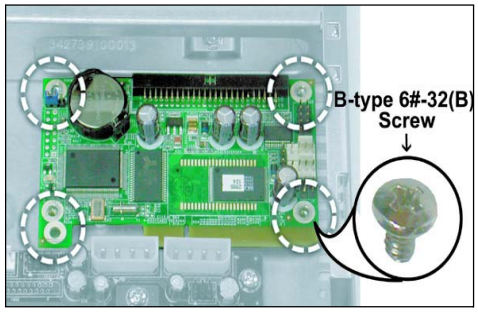
1. Disconnect the power connectors on HDD backplane and M1012.



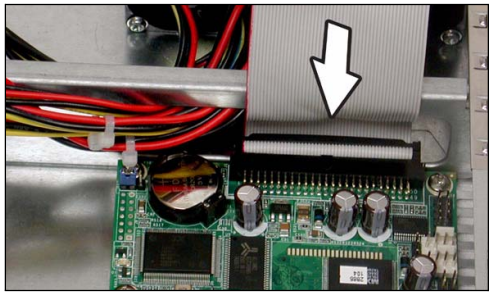
2. Push the power cables aside.



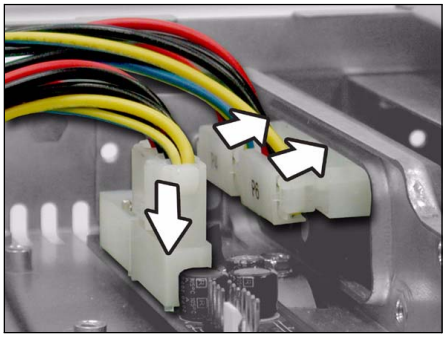
3. Align M3290 with 4 “M2” PC stand-offs. Secure M3290 to mainboard with 4 screws.



4. Connect the cable to M3290. Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.



5. Reconnect the power connectors on HDD backplane and M1012.



Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help.Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website (**www.tyan.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Please feel free to contact us directly for this service at **tech-support@tyan.com**

Help Resources:

1. See the beep codes section of this manual.

2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com

3. Contact your dealer for help BEFORE calling TYAN.

4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

B5191, Service Engineer's Manual v1.0

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